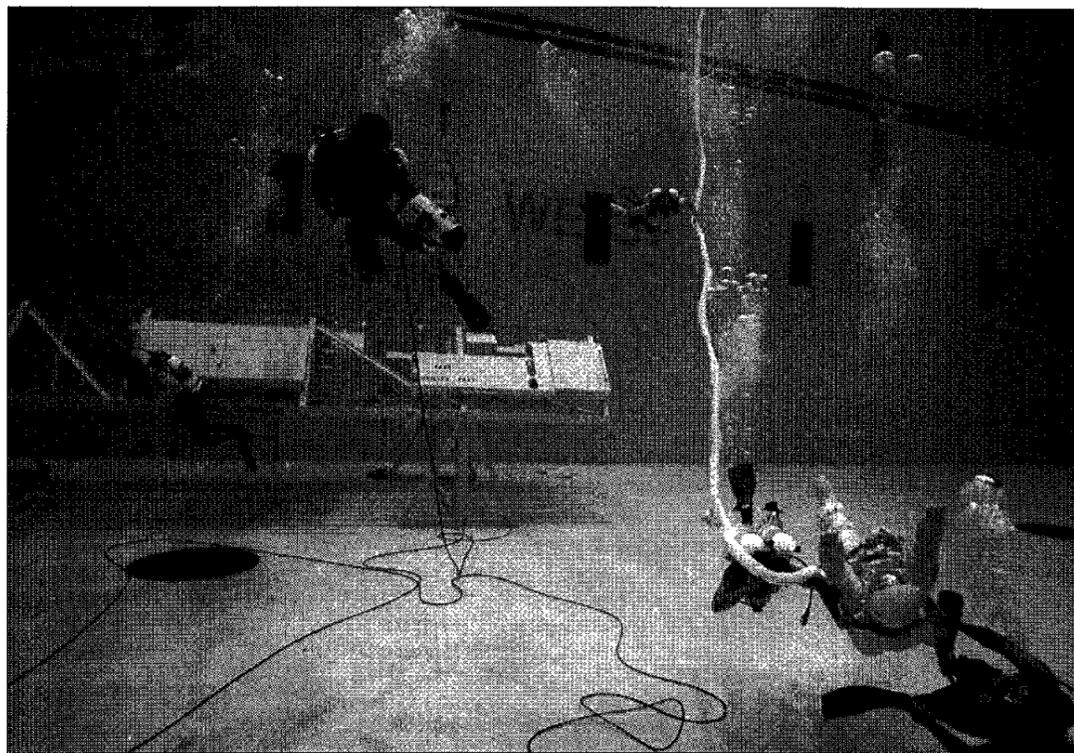


Space News Roundup

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No. 45



Astronaut Jerry Ross makes the first suited astronaut dive in JSC's spacious new Neutral Buoyancy Laboratory in the Sonny Carter Training Facility. JSC Photo by Mark Sowa

Premiere training facility at ready

Neutral Buoyancy Lab well on way toward certification

By Kelly Humphries

JSC's new Neutral Buoyancy Laboratory is well on the way toward acceptance and integration into the space shuttle and space station training flows following its first two suited astronaut tests.

Astronaut Jerry Ross, who chairs the NBL Operational Readiness Inspection committee, became the first astronaut to make a suited dive late last month and followed that the next day by joining colleague Linda Godwin in the first double-suited astronaut dive.

The tests were the culmination of a concerted year-long team effort

leading up to an early December signing in which NASA will take possession from McDonnell-Douglas, the facility's builder and current owner. That date is more than a month earlier than had been planned at first, but it will save the government about \$700,000 and allow the NBL team to support a January joint integrated simulation of space walks for the second Hubble Space Telescope servicing flight as its first operational mission training session.

"The suited runs were a demonstration that, technically, we're ready for operation," said Malcolm Johnson, the NBL group lead for the Space and

Life Sciences Directorate and its Flight Crew Support Division.

What was the hallmark of the accelerated effort?

"Teamwork—you better believe it," Johnson said. "We had a lot of folks doing a lot of super jobs on different components and the NBL just came together smoothly. Each person had assigned responsibilities and they had authority to take care of their responsibilities and they did it. We evolved into a fairly close-knit team and the pride of successful accomplishment is shared by many folks."

Please see **NBL**, Page 4

Columbia faces Atlas, weather hurdles today

By James Hartsfield

The countdown clock for *Columbia* began ticking Tuesday toward a launch planned for 1:50 p.m. CST today on STS-80, although weather and a possible delay in an Atlas commercial launch could force the shuttle to wait.

As of Wednesday, forecasters were calling for only a 10 percent chance of acceptable launch weather today as Kennedy Space Center anticipated strong winds. The same weather pattern was forecast for Saturday and Sunday, although the probability of favorable conditions increases to 20 percent and 30 percent, respectively.

If delayed from a Wednesday launch attempt, the commercial Atlas launch could also force *Columbia* to move to Saturday for the STS-80

launch. *Columbia's* launch time would be 1:51 p.m. CST on both Saturday and Sunday.

Shuttle managers cleared *Columbia* for launch following a Monday review of the findings from an extensive analysis of erosion seen on one solid rocket booster nozzle from the September flight of *Atlantis* on STS-79.

Engineers concluded that the most likely cause for the unusual erosion pattern seen on the STS-79 booster was a pocketing erosion effect triggered by slight ply distortions in the ablative material of the nozzle throat ring and normal variations in other material properties. The throat ring is manufactured by wrapping the abla-

tive material in a criss-cross fashion and curing it at elevated temperatures and pressures. In the curing process, it is believed that the material near the surface may shift slightly, creating distortions. Hot gas during the operation of the motor then caused the pocketing effect and uneven wear seen on STS-79. However, the analysis showed that even with ply distortions at the worst possible levels, there still is a significant safety margin for the operation of the motor.



"I am very proud of this shuttle team and their efforts in reviewing the nozzle issue," Shuttle Program Manager Tommy Holloway said. "I believe we now have a good understanding of the phenomenon seen on STS-79 and are ready for *Columbia's* launch. The extra time we took to make sure

all of the data was properly reviewed and analyzed is indicative of the fact that safety remains the number one priority of this program."

A launch on time today would lead to a landing of *Columbia* at 6:30 a.m. CST Dec. 1.

Meanwhile, *Atlantis* is being readied for a mid-January 1997 launch on STS-81, the fifth shuttle-Mir docking mission, in KSC's Bay 3 shuttle hangar. In the Vehicle Assembly Bldg. this week, the STS-81 fuel tank was mated to the solid rockets. In the Bay 2 shuttle hangar, *Discovery* is on track for a February 1997 launch on STS-82, the second Hubble Space Telescope servicing flight.

JSC urged to join Texans in today's focus on recycling

The Texas Natural Resource Conservation Commission is sponsoring a "Texas Recycles Day" today and JSC employees are encouraged to begin, enhance or support recycling programs both at work and home.

The purpose of Texas Recycles Day is to educate Texans about the environmental and economic benefits of recycling and to stimulate recycling activity. Last year more than 80,000 businesses, organizations and individuals submitted pledge cards to start or increase recycling programs. More than 150 events took place across the state last year.

JSC has programs for recycling paper, cardboard, aluminum cans, scrap metal, automotive-type batteries, tires and toner cartridges. Each year JSC recycles tons of material resulting in reduced pollution and less cost to the government.

"Last year more than 8,790 pounds of aluminum were recycled at JSC," said Teresa Sullivan, JSC Exchange Operations manager. "That translates into 2.5 million cans."

The average Texan throws away more than



Earthwatch

six pounds of garbage a day. More than 22 million tons of garbage go to Texas landfills each year. Up to 80 percent of that waste is potentially recyclable. By simply recycling, Texans can reduce the burden on landfills, save tax dollars, preserve natural resources and protect Texas landscapes.

The Texas Natural Resource Conservation Commission has several recycling suggestions: Think before throwing: reduce, reuse, recycle. Add new

recyclable materials to home, office or school recycling program. Commit to buy and use recycled products at home and work. Start a compost pile with yard trimmings and food scraps. At home, take used motor oil and oil filters to one of the many approved collection centers. Leave grass clippings on the lawn as fertilizer.

For more information on JSC recycling programs call Mike Scott at x33208. For more information on the Texas Natural Resource Conservation Commission visit its home page at: <http://www.tnrcc.state.tx.us/>

Blaha passing along knowledge

By Natasha Calder

America's resident astronaut on the Russian Mir Space Station said this week that he is learning how to operate on a space station and train for station flights.

"Every now and then, about once a week, I send quite a lot of information down to people in Houston who are working on our space station to help them do the things they need to do to put into our operational concepts for that new International Space Station," said John Blaha, now in his eighth week on board.

The crew schedule slowed near the end of last week as the Russian's celebrated the anniversary of the October revolution, but the work pace is now back to normal with work continuing on a variety of experiments.

Blaha, along with Mir 22 Commander Valery Korzun and Flight Engineer Alexander Kaleri, conducted monthly microbial sampling of the air surfaces, water supply and themselves, to monitor bacteria levels.

This week, the crew also conducted the second in-flight experiment to collect urine and saliva for a metabolic study related to protein metabolism and kidney stone risk. This experiment is done routinely within

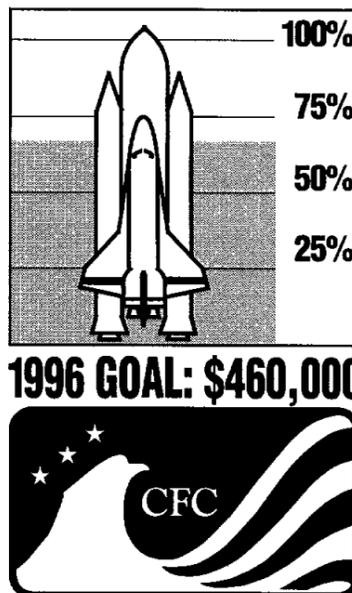
14 days of a planned undocking of a Russian or American spacecraft so that the excess urine can be properly disposed.

The crew also continued to perform routine Earth observations and photography over the week to monitor changes on the Earth's surface from space, and to photograph events such as hurricanes, plankton blooms and volcanic eruptions.

The next Progress resupply vehicle that will carry the crew's Christmas presents from home is scheduled for launch Nov. 20 and will dock to the station two days later.

The space shuttle *Atlantis* is set to return to Mir early next year on STS-81 to bring Blaha home from his four-month mission and deliver astronaut Jerry Linenger. It

Please see **STS-81**, Page 4



Texas Tech honors Gemini astronaut

Texas Tech University recently honored Gemini-era Astronaut Charles Bassett for his contributions to space technology with the dedication of an electrical engineering research laboratory.

The electrical engineering research annex that now bears Bassett's name has been used by faculty and graduate students for more than 15 years, supporting studies in the Department of Electrical Engineering at Texas Tech, where Bassett earned his undergraduate degree in 1960.

"This is a fitting tribute to a man who dedicated his life to pursuing the dream of space flight," said NASA Administrator Daniel Goldin.

Please see **TECH**, Page 4

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x35350 or x30990.

Aeros vs. Las Vegas Thunder: 7 p.m. Dec. 20. Presale tickets cost \$15.

Dickens on the Strand: Dec. 7 and 8. Tickets cost \$6.50.

Walt Disney's World on Ice "Pocohontas": Matinee starts at noon, Nov. 30. Tickets cost \$14.

EAA Christmas dinner/dance: The EAA Christmas dinner dance will be at 7:30 p.m. Dec. 14 at the Gilruth. Tickets cost \$25 per person.

EAA Spring Break Special to Rome: March 8-15, \$1,099 double occupancy. \$200 deposit required. Final payment due Jan. 8.

EAA Belize Resort Trip: Available through Dec. 15. Cost is \$472 per person double occupancy. \$100 deposit required with final payment due 30 days before departure.

Sam Houston Race Park Track Pack: \$10 value pack for \$5.25, includes Club Level seating, program, tip sheet, admission, preferred parking and gift shop discount.

Space Center Houston: Adult \$8.75; children (4-11) \$6.25, annual membership \$25.95, family membership (up to four) \$59.95.

Movie discounts: General Cinema, \$4.75; AMC Theater, \$4.50; Sony Loew's Theater, \$4.75.

Franklin Planner refills: now taking orders for 1997 calendars.

Sweetwater Pecans: \$5.65 per pound. Orders should be placed by Nov. 8 for the Nov. 18 delivery, or Nov. 29 for the Dec. 5 delivery.

Stamps: Book of 20, \$6.40.

Entertainment '97 books: Cost is \$25.

Metro tickets: Passes, books and single tickets available.

JSC

Gilruth Center News

EAA badges: Dependents and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Cost is \$5. Dependents must be between 16 and 23 years old.

Hatha Yoga: A stress relieving, stretching and breathing exercise routine to unite body, mind and spirit.

Nutrition intervention program: A six-week program to learn more about the role diet and nutrition plays in health, including lectures, private consultations with a dietitian and blood analysis. Program is open to all employees, contractors and spouses. For more information call Tammie Shaw at x32980.

Defensive driving: One-day course is offered once a month. Pre-registration required. Cost is \$25.

Stamp club: Meets at 7 p.m. every second and fourth Monday in Rm. 216.

Weight safety: Required course for employees wishing to use the weight room will be offered from 8-9:30 p.m. Dec. 3 and 17. Pre-registration is required. Cost is \$5.

Exercise: Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays.

Aikido: Martial arts class meets from 5:15-6:15 p.m. Tuesdays and Wednesdays. Cost is \$35 per month. New classes begin the first of each month.

Aerobics: Classes meet every Monday, Tuesday and Thursday.

Ballroom dancing: Cost is \$60 per couple. For additional information call the Gilruth Center at x33345.

Country and Western dancing: Beginner class meets 7-8:30 p.m. Monday. Advance class meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

Fitness program: Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

JSC

Property

Sale: 40 prime acres, house, barn, all amenities, 15 mi East of Tyler, \$120k. 488-5058.

Rent: Baywind condo 2-2, ceiling fans, W/D conn, \$530 mo avail 12/01/96. x47326 or 486-9673.

Rent: Duplex, Santa Fe, TX, 3-1.5, formal LR/DR, kitchen appliances, central air/heat, brick, W/D conn, sm yard, adults, non-smokers, no pets, \$550 mo + security dep. 244-0250 or 409-925-7839.

Sale: Galveston historic home, 1857, 3BDR, 2500 sq ft, 12' ceilings, 3 FPL's, \$145k. 409-762-4171.

Sale/Lease: University Trace condo 2-2.5, dining room, 2 cov'd parking spaces, W/D, new refrig, \$675 mo/\$47.9k. 280-0991.

Sale: 2.25 Hill Country acres, seasonal creek, 3-2 fixer-upper, 15 mi NW of San Antonio, \$30.5k or O/C \$2.5k dwn/\$369.41 mo/120 mos 10% interest. Dave, 333-4760 or 480-1821.

Sale: Duplex home, Texas City, TX, 2-1-2D, excellent rental property, \$28k. Marianne, x38528.

Lease: Glen Cove, 3-2-2C, new appliances, fenced yard, \$750 mo. 334-5113.

Sale: Clear Lake Forest, 3-2-2, remodeled kitchen, lg sun room addition, sprinkler system, new roof, approx 1 acre wooded lot, \$141.5k. 326-2557.

Rent: Beach house, Crystal Beach, TX, Galveston County, sleeps 10, furn, ocean view, weekly/wknd. 486-1888.

Rent: Beach house, West Galveston, Jamaica beach, 2nd row on beach, all amenities, sleeps 7, winter rates. 488-6796.

Rent: Arkansas cottage overlooking Blue Mountain Lake and Mount Magazine, furn, massive FPL, antiques, views, \$50/dly or \$250/wkly. Corcoran, x47806 or 334-7531.

Cars & Trucks

'85 Ford F150 Supercab, 302 V8, cold A/C, capt chairs, progressive chrome rims, new 32" B.F. Goodrich Mts on rear, may need engine work, \$3.5k obo. James, 333-6188.

'86 GMC Suburban, A/C, P/L, P/W, AM/FM/cass, auto, running boards, runs great, \$3.2. Mari, x36670.

'94 Chevy Camaro, V8-LTI, 6 spd, Police package, 26k mi, red/black, loaded, alarm, CD, ex cond, \$14.5k. Kent, x36729 or 286-0649.

'93 Jeep Cherokee, "Sport", 4 dr, 2WD, auto-O/D, tilt, A/C, cassette, new battery, black/gray, 39k mi, ex cond, \$12,775 obo. Dan, x34640 or 482-550.

'83 Toyota PU 4x4, A/C, roll bar, dark green, ex cond, \$4.2k. Lem, x49843 or 532-2215.

'89 Chevy Beretta, 2.8 V6, cruise/tilts, great school/work car, \$3.9k obo. Angie, 244-5408 or 337-1311.

'86 Plymouth Voyager, all options, include rear air, 99k mi, \$4.3 bob. x47326 or 386-9673.

'91 Honda Civic 4 dr, navy inter, good cond, 38k mi. 554-5492.

'87 Acurra Legend, 4 dr, white, power, A/C, runs great, \$3.5k. x39239 or 484-6062.

'93 Chevy Camaro Z28, 6 spd, ex cond, warranty, 44k mi, loaded, black, 14.3k. x34544 or 326-3759.

'79 Porsche 911SC, white/brown, A/C, 100k mi, \$10.9k. Steve, 486-8047.

'86 Taurus LX power, condition, runs good, \$2.5k. 538-1854.

'87 Nissan Sentra XE, 4 dr, sedan, cloth inter, A/C, AM/FM stereo, brown, good cond, \$2.8k. 482-1330.

'84 Ford LTD, 351, AT, P/S, P/B, \$600; '86 Honda CRX, \$1.5k. 332-8618.

'78 Jeep Cherokee, 4x4, auto, V8, tilt, P/S, P/B, A/C, new tires, AM/FM/cass, \$2.5k obo. Dave, 333-4760 or 480-1821.

'91 Toyota Camry, 4 dr sedan, auto, A/C, AM/FM/cass, ex cond, \$7k. 282-3229 or 286-4547.

'89 Olds Royale Brougham 88, 4 dr, P/W, cruise, AM/FM/cass, electric climate control, well maintained, 91k mi, \$6k neg. 282-2045.

'89 Pontiac Sunbird, 4 dr, auto, very cold A/C, ex cond, new tires, \$2,495. Ayub Khan, x39199.

'88 Lincoln Town Car, 79k mi, garage kept, leather, ex cond, \$5,250. x33187 or 488-5162.

'83 Mercedes 380 SL, silver, both tops, \$13.2k. Steve, x35145.

Boats & Planes

Cat w/sails, 18', trailer, \$900. 474-4742.

Sail boat, 24', 4.5Hp OB, 4 sails, sleeps 5, many extras, \$4.4k neg. 339-3508.

'93 Crownline 196' bowrider, Merc V8, loaded, custom cover, Shorelander custom trailer, \$13.9k. Don, x38039 or 333-1751.

Jon boat, 13', new seats/trailer, 4Hp Mercury OB, good cond, \$1.2k. Robert, x36402 or 286-0434.

'94 Cajun 189 Tournament Pro Bass boat, 175Hp Johnson, full electronics, 58# trolling motor, \$13k obo. x38912.

Canoe, Oldtown Discovery 169, hunter green, molded seats, beautiful, include auto roof carrying pads, \$550 neg. 334-1217.

Cycles

'88/'89 ATK 250 motor-cross dirt bike, ex cond, w/racing enhancements, \$5k obo. 992-1552.

'84 Honda Sabre 45, 700cc, \$1.4k. Dianne, x37595 or Gary, 409-938-7737.

'92 Kawasaki Vulcan 88, 1500cc, Harley-Davidson classic look, saddlebags, windshield, helmets include, \$5k. Leslie, x41125 or Vada, x332-5278.

'86 Honda Magna 700, ex cond, 13k mi, garage kept, helmets and cover include, \$2.1k firm. Mike, x38174 or 996-9526.

Audio Visual & Computers

Mac computers, Centris 650 CD, Performa 466, software, make offer. Dennis, x39012 or 992-5285.

Laptop 386 Compaq, \$390; Toshiba w/dock, \$450; DX2-66 8Mb/850Mb, \$695; Pentium 100/133/166 8Mb/850Mb, \$919/\$979/\$1,119; 30 + S/W programs. Don, 333-1751.

Sony stereo component cabinet w/glass door, oak 38"hx20"wx16"d, ex cond, \$60. 326-4276.

Marshall 400W stereo slave power amp, 200W/ side 40hms, w/guitar or bass pre-amp, power to drive additional speakers, \$250. Mike, x38231 or 484-2327.

Ten disc CD player/changer for automobile, w/5 yr warranty, \$375. David, 476-5550.

Craig AM/FM stereo/CD/cass recorder, \$40. 879-1325.

EIDE disk controller card, Promise 2300, supports up to 4 HD/CD-ROMs w/LBA and mode 4, ex cond, \$40. Jeff, x38424 or 992-9571.

Two EDO 4Mb RAM's, \$35 ea. Ken, 244-0280 or 996-0618.

Compaq computers, 1 Prosignia PC, server, 486/ 66 12Mb RAM, and 240Mb HD w/kybd, \$800; 1 Deskpro/i 486, 4Mb RAM/240Mb HD w/many interface cards and keyboard, \$550; high speed scanner,

gray scale, Fujitsu Scan Partner, \$900 obo. x32920 or 610-9282.

Sharp 20" stereo TV w/remote, on-screen display, cable ready, \$160. Steve, x48635 or 282-0142.

Mini-Rex rabbits, \$10 ea. 482-0874.

Free small terrier-mix, approx 4yrs, female, needs attention, friendly. x345312.

Free dog, mix, 8 mos old. Shelley, x37824 or 409-943-4168.

Two Cockatiels, 3 yrs old, includes 2 cages, \$85 both. 488-4101.

JSC

Dates & Data

Today

Concert: The Bay Area Chorus presents "Music of the Ages" at 8 p.m. Nov. 15 at UHCL Bayou Auditorium. Tickets cost \$10 for adults and \$5 for students and seniors and are available at the Bldg. 11 Exchange Store. For more information call the Bay Area Chorus Hotline at 684-6030.

Reservations due: Citizens of the Clear Lake Area are holding a "Clear Lake Pioneer Reunion" at 6 p.m. Nov. 23 at the Clear Lake Golf Club. Cost is \$30 per person. Reservations are due by Nov. 15. For more details call Shirley Safer at 488-6260 or Gloria Goldstein at 286-8882.

Cafeteria menu: Special: fried chicken. Total Health: vegetable lasagna. Entrees: pollock hollandaise, beef stroganoff, vegetable lasagna. Vegetables: steamed broccoli, carrots vichy, Italian zucchini, breaded okra.

Monday

Cafeteria menu: Special: meat sauce and spaghetti. Total Health: potato baked chicken breast. Entrees: wieners and beans, sweet and sour pork chop, potato baked chicken, steamed fish, French dip sandwich. Soup: cream of broccoli. Vegetables: French cut green beans, seasoned rice, California vegetables, buttered beans.

Tuesday

Cafeteria menu: Special: smothered steak with dressing. Total Health: baked potato. Entrees: beef stew, liver and onions, shrimp Creole, baked chicken, fried cod fish, French dip sandwich. Soup: navy bean. Vegetables: steamed rice, seasoned cabbage, corn O'Brien, peas.

Wednesday

Spaceland Toastmasters meet: The Spaceland Toastmasters will

meet at 7 a.m. Nov. 20 at the House of Prayer Lutheran Church. For details call Jeannette Kirinich x45752.

Spaceteam Toastmasters meet: The Spaceteam Toastmasters will meet at 11:30 a.m. Nov. 20 at United Space Alliance in the Civic Room at 600 Gemini. For more information call Pat Blackwell at 282-4302 or Ben Black 282-4166.

Astronomy seminar: The JSC Astronomy Seminar will meet at noon Nov. 20 in Bldg. 31, Rm. 129. An open discussion meeting is planned. For more information call Al Jackson at x35037.

Scuba club meets: The Lunar-fins will meet at 7:30 p.m. Nov. 20 at Redfish Restaurant under the Kemah/Seabrook Bridge, Seabrook Side. For more information call Fred Toole at x33201.

Cafeteria menu: Special: salmon croquette. Total Health: baked potato. Entrees: roast pork, stir frybaked perch, steamed fish, vegetable lasagna, Reuben sandwich. Soup: seafood gumbo. Vegetables: mustard greens, okra and tomatoes, vegetable sticks, lima beans.

Thursday

Directors meet: The Space Family Education board of directors will meet at 11:30 a.m. Nov. 21 in Bldg. 45 Rm. 712D. For more information on this open meeting call Gretchen Thomas at x37664.

AIAA meets: The Houston Chapter of the AIAA will host an open house with McDonnell Douglas Aerospace at the Neutral Buoyancy Laboratory Sonny Carter Training Facility at 5:30 p.m. Thursday. A tour of the new facility, free pizza and soft drinks will be provided for the open event.

Cafeteria menu: Special: stuffed cabbage rolls. Total Health: baked potato. Entrees: beef tacos, ham

and lima beans, pork and beef egg rolls, steamed fish, catfish, French dip sandwich. Soup: beef and barley. Vegetables: Brussels sprouts, green beans, buttered squash, pinto beans.

Friday

Cafeteria menu: Special: baked chicken. Total Health: roast beef au jus. Entrees: deviled crab, baked chicken, beef cannelloni, steamed pollock, Reuben sandwich. Soup: seafood gumbo. Vegetables: seasoned carrots, peas, breaded okra, steamed cauliflower.

Nov. 28

Radio club meets: The JSC Amateur Radio Club will meet at 7 p.m. Nov. 28 at the Nassau Bay City Hall. For more information call Larry Dietrich at x39198.

Dec. 3

ABWA meets: The American Business Women's Association, Clear Lake Area Chapter will meet at 5:30 p.m. Dec. 3 at Bay Oaks Country Club. For more information call Kathleen Kaminski at x38706.

Dec. 5

Warning system test: The site-wide Employee Warning System will undergo its monthly audio test at noon Dec. 5. For more information call Bob Gaffney at x34249.

Dec. 10

BAAC meets: The Bay Area Aero Club will meet at 7 p.m. Dec. 10 at the Houston Gulf Airport in League City. For details call Jerry Adair at x38058.

Dec. 11

MAES meets: The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. Dec. 11 in the Bldg. 3 Cafeteria executive dining room. For details call Michael Ruiz at x38169.

Swap Shop

Wanted

Want personnel to join VPSI vanpool departing South Braeswood Park and Ride lot at 6:50 a.m. for JSC and offsite locations, 7:30 - 4:30 shift. Susan Gaynor, 282-5447 or Al Rudder, x34997.

Want roommate, large 4-2.5-2 in Seabrook, separate loft/living area and phone, cable/fax, W/D, \$375 mo. 474-4742.1 non-smoking roommate to share 3BDR townhouse in Clear Lake area, \$375 mo w/bills pd, avail, 12/1. John, x30543 or 286-7384.

Want double wide baby jogger for expanding family. Pete, x40016.

Want white wicker loveseat and chair, ex cond. Lorraine, 480-0014 ext 33.

Want JSC Star Trek fans interested in getting together to discuss events in the Trek universe. x33082.

Want Calphalon Non-stick cookware set, or individual pieces. Katrina, x486-5843 or 488-1639.

Want baby jogger in good cond. 480-3944.

Want electric guitar w/amp. 482-0874.

Want to buy old "Lego" sets for my kids. 481-4883.

Miscellaneous

Pick-up cover, aluminum, sliding windows, \$375; weight bench, \$40. Bill, x32131 or 554-6242.

Vitamaster 6250 treadmill w/pulse monitor/time/speed/dist/calories displayed, \$150. Emily, 992-2306 or x45171.

Sears carpet cleaning machine, \$135; center console for Chevy 60/40 bench set, maroon, \$45; set of towing mirrors for Chevy Truck extends 6', \$45; Nokia cellular hand held phone, \$35; electric Bout winch 12VDC, \$45. Mike, x37768 or 409-925-2330.

Sewing machine/cabinet, chair, ex cond, \$200; computer Telex 1240-Pontiac wheels, \$25 ea; vacuum cleaner, \$25; ceiling fans, \$20 ea, doll reader magazines, \$2 ea; CD's, \$5 ea. 488-6521.

Dickens on The Strand costume, ladies, sz 12, \$25; baton twirling costumes, girl sz 8/10, \$25 ea; pageant dress, sz 8, \$25; baby girl cloths, sz 0-24 mos, ex cond, \$0 - \$5. 488-6521.

Browning 12 GA pump shotgun w/chokes, ex cond, \$325; Ruger super Blackhawk 44 magnum w/7.5" barrel, ex cond, \$350. Rusty, 212-1450 or 481-5498.

Soloflex, ex cond, \$400 obo; Busybody-Proform 830 stair-Master, \$150 obo; RAC 24" color TV w/remote, \$75. Alice, 286-6123.

Sony Playstation, ex cond, includes memory card, connector and game Resident Evil, new \$300 sell \$200; bowling ball, bag, shoes, \$20. 479-7437.

Stationary bicycle, Performax 5500 w/Ergometer, adjustable tension, speedometer, odometer, \$50. 334-1217.

Ruger-77, 243 cal, flat bolt model, ammo, scope rings, \$15, scope extra; Ruger 77, 338 Mag, 2 boxes Winchester ammo, \$440. Charles, x37678 or 661-4789.

Rattan Momanas rocker, \$45. Kathy, 337-5622.

Utility trailer, setup for windsurfing, easily changed for jet ski's, sm boat, motorcycles, \$170. John, 280-2146.

Pair custom designed hand carved french love seats, cushions down filled, \$800 pr; 4-GJX14 alloy automobile wheels, ex cond, \$100 for all; pair sm cages, suitable for birds or gerbils, \$20 for both. 488-5564.

Saddle, great cond, new sheep skin padding and

leather straps, include 3 girths different sizes, \$300 obo; halter, bits. 326-5385.

SoloFlex workout system, ex cond, \$350. 281-488-5051.

Garden tiller, Troy-Built Junior, 4Hp Tecumseh engine, includes manual, \$600 neg. 334-1217.

Browning 7mm Mag A-bolt w/Leupold 3.9 50mm objective scope, matte finish w/synthetic stock, gun case and sling, \$600. Ken, 244-0280 or 996-0618.

Stairclimber, \$50. Shelley, x37824 or 409-943-4168.

White beaded Victorian wedding dress, sz 6/8, veil, fitted v-back w/drop pearls and long bustled train w/cutouts, \$380. x34544 or 326-3759.

Stroller, \$20; car seat, \$15; matching crib bedding ensemble, \$60; toddler bed w/mattress, \$20; bedding, \$25; exercise bike, \$20; round white patio table, 4 chairs, \$75; round glass table w/chrome legs, \$50. 486-8047.

Cold Colleague

JSC space walk engineer uses Antarctic expedition to study extraterrestrial EVA

By Kelly Humphries

When Robert Trevino goes outside today, the temperature probably will be in the 30s and he'll be preparing to conduct a flight test.

But the 30s he'll be experiencing will be below zero, the flight test will be for a Dehaviland Twin Otter fitted with skis and the landscape over which he'll be flying will be Antarctic.

Trevino, a veteran flight controller and staff engineer for the Advanced EVA Research and Development Group, is participating in an exchange assignment with the National Science Foundation's Support Office for Aerogeophysical Research.

Trevino left Houston and its balmy weather for Antarctica in October as part of an NSF-sponsored expedition that is using the airborne platform and an integrated suite of instruments such as ice-penetrating radar, laser altimeters, gravimeters and a magnetometer for use in tracking the movement of the Antarctic ice shelf and investigating evidence of global warming.

Trevino's assignment will involve engineering, integration and setup of the aircraft's instrumentation suite and operating it as a member of the air crew. He'll be working with a group of 15 people from various organizations and backgrounds, all of whom have an important role to play in the expedition. "You can't just go as an observer," he said.

At first blush, this may not sound relevant to his job in the EVA Projects Office at JSC.

But Trevino plans to perform space walk and other space-related studies while in the Antarctic climate.

"This field expedition will provide NASA a unique opportunity to cooperate with NSF and acquire experience beneficial during the planning stages of the Human Lunar Return and Marx Exploration Missions," wrote SOAR Director Donald Blankenship in his invitation for Trevino to join the expedition. "There are compelling similarities between human exploration of the Moon and Mars and Antarctic research. In addition to his primary mission objective with SOAR, Mr. Trevino will be studying how Antarctic operations are conducted, equipment designed and how humans interact under harsh conditions and rugged terrain."

Trevino's work in the area of advanced EVA systems involves the management of systems that support human exploration and development of space. He works with space suits, tools, equipment and cooperative EVA-robotics systems, and is involved in development of an EVA technology road map to support future lunar and Mars exploration study teams.

"My main interest is seeing first-hand how they conduct their operations, their science and their research," he said. "I'll be looking at how the experiment equipment is designed, how the team interacts and at the psychological aspects."

Antarctica's harsh, cold environment, geologic processes and isolation pose challenges similar to those posed by other worlds

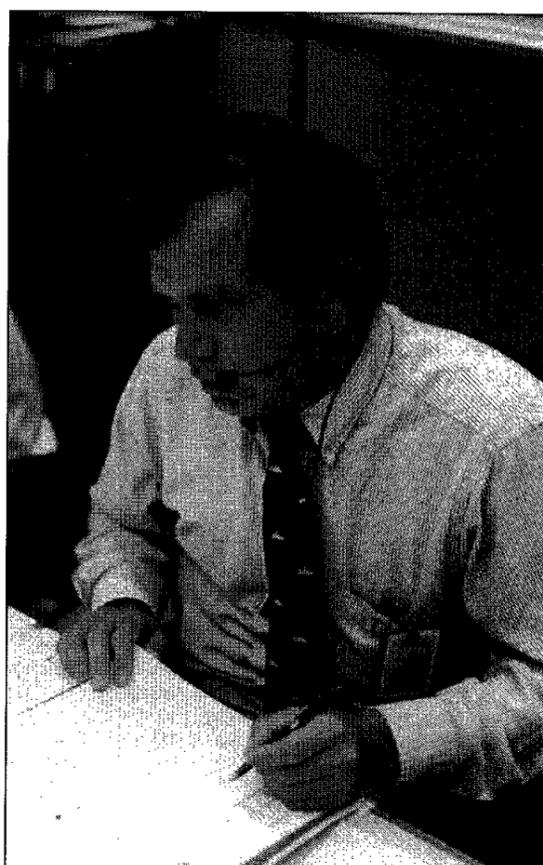
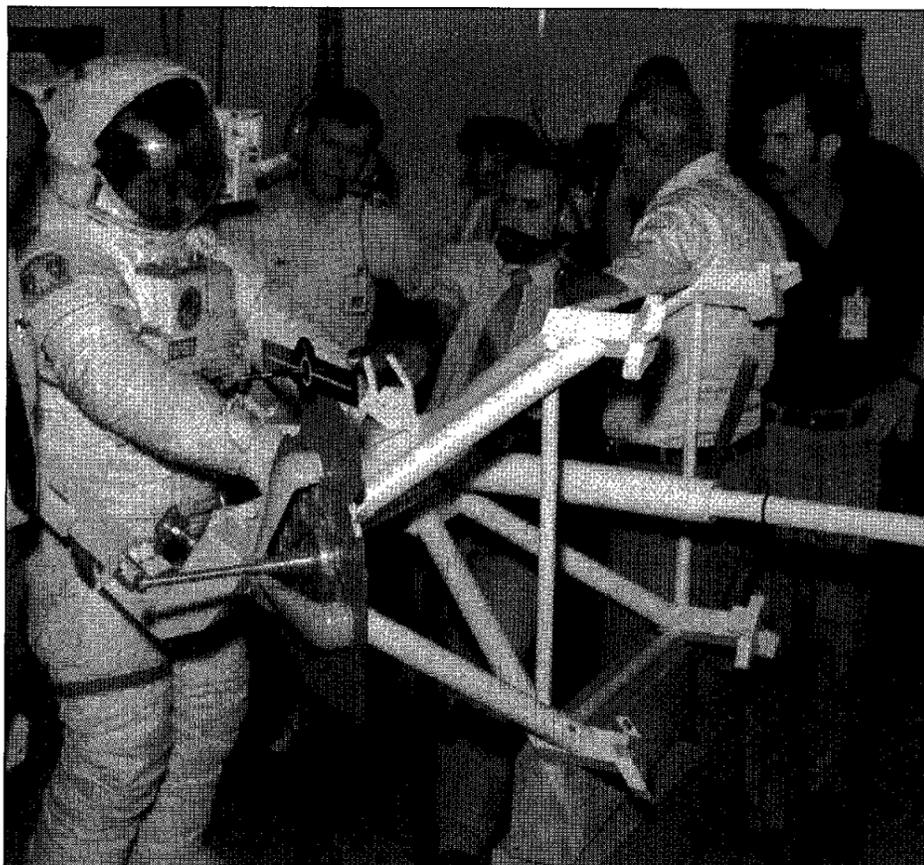
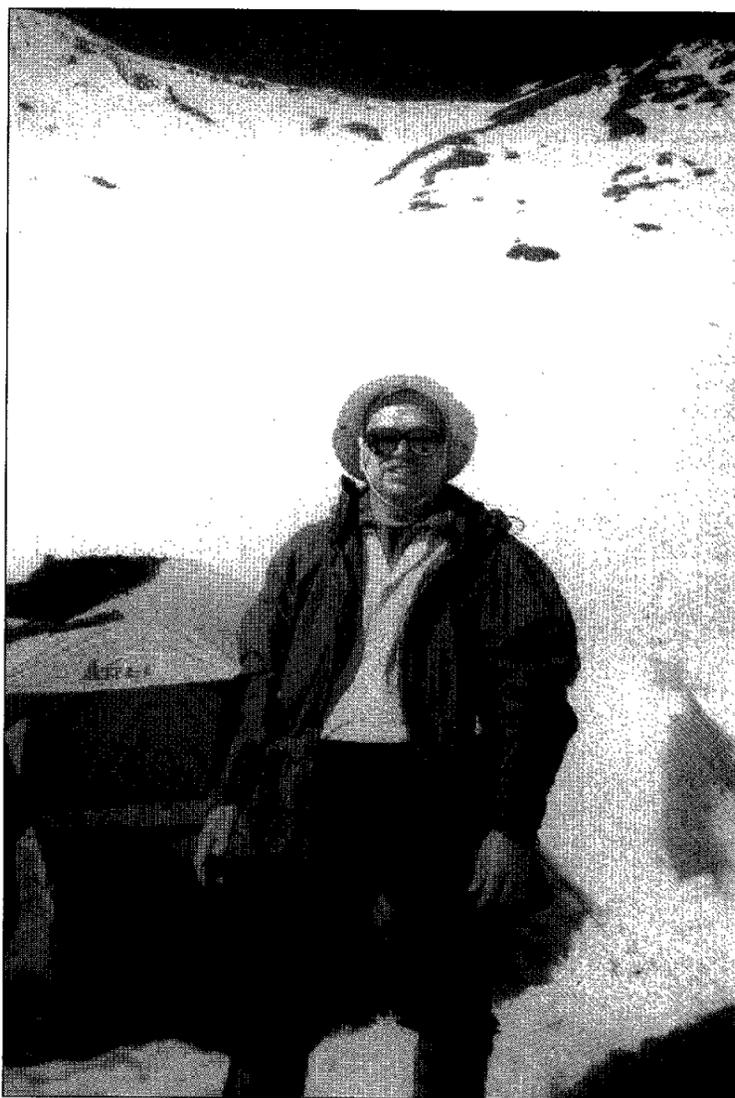
and could be useful in developing and testing future human planetary surface systems, Trevino said. He plans to study the design of tools, equipment and techniques—such as core drilling through the Antarctic ice—that could be related to future EVA systems.

He also plans to closely observe logistics and resupply strategies that are used during the expedition with an eye toward the efficient use and conservation of limited resources. Maintaining and operating the expedition aircraft over a period of two months while bundled up and heavily gloved against the extreme cold will provide a situation analogous to performing multiple EVAs on another world from a habitat or pressurized rover. He plans to record the times at which he performs maintenance and repair work, and the length of time it takes to perform the repairs in the harsh environment in hopes that the log will be useful in space mission planning.

"I was surprised at how much literature and research has been done on integration in the Antarctic environment," Trevino said. "The NSF's activities in Antarctica are similar to NASA's activities in space."

Because teams in Antarctica spend long periods in isolation and confined spaces at vast distances from a safe base, Trevino said, he will observe the human factors and interpersonal dynamics of the research team and make notes of his moods and feelings using a series of psychological questions provided by Dr. Joanna Woods of JSC's psychological and behavioral lab.

Top: Robert Trevino, staff engineer for the Advanced EVA Research and Development Group at JSC, takes a break at Base Camp 2 during his climb to the 14,161-foot summit of Mt. Shasta in California. Trevino made the climb as a training exercise to prepare himself for the rigors of his Antarctic expedition. He also climbed to the summit of the 10,457-foot Lassen Peak in Lassen Volcanic National Park, Calif. Bottom left: Trevino participates in a simulation of an STS-51L space walk that utilized a "stinger" satellite capture device. Bottom center: Trevino works on console in the Mission Control Center during the STS-51L extravehicular activity. Bottom right: Trevino stands atop the summit of Guadalupe Peak in Guadalupe Mountain National Park, Texas, during another training exercise.



Geologic events may have created Earth's oxygen supply

A NASA scientist recently reported that refined calculations and new evidence support a revolutionary suggestion that global-scale geologic events produced the bulk of Earth's oxygen supply.

Scientists have long believed that oxygen collected in Earth's early atmosphere as a by-product of plant life from a process called photosynthesis, in which plants take carbon dioxide and water to produce organic matter and oxygen.

David DesMarais of NASA's Ames Research Center, first suggested in 1992 a relationship between oxygen and the collision of continents, the resultant colossal mountain ranges and increased erosion burying huge amounts of organic matter in ocean beds.

"Although photosynthesis did provide an oxygen source strong enough to sustain the amount of existing oxygen, the creation and assembly of large modern-sized

continents was responsible for early dramatic increases in oxygen," DesMarais said.

DesMarais recently reported new evidence supporting his findings at the Geological Society of America meeting in Denver.

DesMarais' research correlates oxygen "surges" in the atmosphere 2.2 to 2.0 billion years ago with changes in the amount of carbon stored in Earth's crust at that time. During that time, several of Earth's

"micro" continents crashed together forming new, stable modern-sized continents. As the continental fragments collided, towering mountain ranges formed. Their steep slopes produced rapid erosion and sedimentation, key to DesMarais' theory.

Organic matter is normally consumed by bacteria and animals, a process that utilizes oxygen (respiration), producing energy and carbon dioxide and water as by-products. According to DesMarais, when huge

amounts of organic matter were buried during cataclysmic collisions, oxygen was freed to accumulate in Earth's early atmosphere.

"The cycle of photosynthesis, which produces oxygen, and respiration, where oxygen is consumed, is an almost break-even process," he said. Only when large amounts of organic material are buried in ocean sediments during tectonic upheavals can the amount of oxygen in the atmosphere increase substantially.

STS-81 crew, Blaha talking

(Continued from Page 1)

will also deliver tons of food, fuel and other supplies as it has on previous Mir docking missions. The first shuttle mission of 1997 will be commanded by Astronaut Mike Baker, who recently talked about how the supplies transfer lessons of STS-79 are being put to use, and how he and his crew are progressing in their training.

"We have certainly talked with the STS-79 crew and listened to all their debriefs on transfer. Marsha Ivins is our loadmaster, and she has worked closely with Tom Akers, the STS-79 loadmaster, to see what recommendations he has made. Of course we will incorporate all of those.

"Specifically, I think one of the biggest things that's going to help us out is that on every one of these flights we're improving our logistics transfer. This time both the cosmonauts and John Blaha onboard the Mir will have done this once before already," Baker said. "The other thing we will do is to get timely information by talking to John several times and using our Mission Control folks over in Moscow to talk to him and make sure all of his stuff is ready to go. Even today we don't know exactly what we will be carrying up and transferring. So we will try to pin that down as soon as we can. I'm sure it will go smoothly."

Tech honors Bassett

(Continued from Page 1)

"It is gratifying to know that the laboratory bearing his name will help to encourage today's students to achieve their own personal goals."

Bassett was selected as an astronaut in October 1963. He was training for Gemini 9 along with Elliot See in February 1966 when they died in a T-38 training jet accident in St. Louis. Gemini 9 demonstrated rendezvous and space walk techniques used in Apollo.

"This is a tremendous honor and a generous remembrance of Charlie's life and accomplishments," said JSC Director George Abbey. "We share the pride that Charlie's family feels... This dedication reflects Charlie's own strong beliefs in the value of education and perseverance."



Mars Global Surveyor sails into a cloudless sky atop its Delta II launch vehicle last Thursday.

Mars probe on its way

Mars Global Surveyor blasted off from Cape Canaveral Air Station's Launch Complex 17A at 11 a.m. CST last Thursday and is now on its way to a September 1997 rendezvous with the Red Planet.

Lift-off was delayed a day by clouds and upper-level winds, but with good weather the launch and automated Delta rocket operations went as planned.

The three-stage Delta vehicle and its nine solid-fuel strap-on boosters lifted the spacecraft 70 miles above the Earth, then the second stage boosted the payload to a circular parking orbit of 115 miles about 10 minutes after launch, where the spacecraft coasted for about 30 minutes before reaching its proper position

over the eastern Indian Ocean.

The Delta's third stage fired for about 90 seconds to spin up Mars Global Surveyor to 60 rpm and send the Mars craft on its way.

The spacecraft's solar arrays deployed but telemetry indicated one of the solar panels did not fully open. The spacecraft team expected to have the array fully unfolded the next day.

Surveyor's radio signal was acquired on time, about 70 minutes after launch, by the 112-foot antenna of NASA's Deep Space Network at Canberra, Australia.

Today, Surveyor will fire its main engine in the first of four trajectory correction maneuvers to fine-tune its flight path to the Red Planet.

Aircraft control system wins 'Best of What's New'

An experimental aircraft flight control system that learns as it flies has been honored as one of the best technology developments of 1996.

Developed for NASA and the U.S. Air Force, the computerized flight control system has been installed on an 8-foot-4-inch remotely piloted aircraft called "LoFLYTE" being prepared for flight demonstrations this month. The jet-powered aircraft was developed by Accurate Automation Corp., Chattanooga, Tenn., under the Small Business Innovation Research program.

The LoFLYTE hypersonic waverider aircraft was named one of the 100 "Best of What's New" in the annual Popular Science magazine competition. Winners were announced Tuesday at an exhibition in New York City's Central Park and will be featured in the magazine's December issue.

The experimental LoFLYTE aircraft will be used to explore new flight control techniques involving neural networks, which allow the aircraft control system to learn by mimicking the remotely-sited pilot. Technologies being implemented in the LoFLYTE program could eventually find their way into commercial, general aviation and military aircraft. Flights are taking place at Edwards Air Force Base, Calif., with the support from NASA's Dryden Flight Research Center.

The model is a Mach 5 waverider

concept, a futuristic hypersonic aircraft configuration that could cruise on top of its own shockwave if powered to reach hypersonic speeds. LoFLYTE represents the first known flying waverider vehicle configuration. In the current flight tests it is powered by a small-scale jet engine and will reach subsonic speeds to explore takeoff and landing control issues.

The aircraft has been designed to demonstrate that neural network flight controls are superior to conventional flight controls. Neural networks are computer systems that actually learn by doing. The computer network consists of many interconnected control systems, or nodes, similar to neurons in the brain. Each node assigns a value to the input from each of its counterparts. As these values are changed, the network can adjust the way it responds.

The LoFLYTE aircraft's flight controller consists of a network of multiple-instruction, multiple-data neural chips. The network will be able to continually alter the aircraft's control laws in order to optimize flight performance and take the pilot's responses into consideration. Over time, the neural network system could be trained to control the aircraft. This could enable pilots to control aircraft in highly difficult circumstances and even enable them to land in situations where critical control surfaces have been damaged.

Holidays to affect Roundup calendar, classified deadlines

Because of the Thanksgiving and Christmas holidays, Space News Roundup will not be published Nov. 29 or Dec. 27.

These changes will affect some deadlines.

The deadline for Swap Shop ads and Dates and Data calendar items for the Dec. 6 issue will be 5 p.m. Nov. 22.

Around Christmas, the deadline for Swap Shop ads to be published in the Dec. 20 Roundup will remain unchanged at 5 p.m. Dec. 6. The deadline for Dates and Data items

for that issue also will be 5 p.m. Dec. 6.

The deadline for Swap Shop ads for the Jan. 4 issue will be 5 p.m. Dec. 18. The deadline for Dates and Data items for that issue will be 5 p.m. Dec. 20.

All ads and calendar items will be published on a space-available basis, first come, first-served. Any ads that cannot be published will be discarded and the requesting employee will need to re-submit a completed JSC Form 1452 to have the ad printed in a later issue.

Transition from WETF to NBL should be complete by late spring

(Continued from Page 1)

Part of the Sonny Carter Training Facility, the NBL will use the largest indoor pool in the U.S. to simulate the weightless environment of space and familiarize astronauts with the dynamics of body motion through the effect of "neutral buoyancy." The pool is 102 feet wide by 202 feet long and 40 feet deep and contains 6.2 million gallons of City of Houston water. It took 500 truckloads of concrete to pour the six-foot-thick floor. The NBL pool is 12 times larger than the Weightless Environment Training Facility, which is 78 feet long by 33 feet wide and 25 feet deep.

"The new facility is outstanding. It's something that is going to be extremely important for this agency and the future of human space flight and it is world-class in its capabilities," Ross said.

"I have been extremely pleased by the hard work and dedicated teamwork of all the people involved; they

really pulled together," he added. "We hit some problems along the way and every agency involved, McDonnell Douglas and everyone on site, has pitched together and worked through them and met a demanding schedule."

Where astronauts previously could train only on International Space Station or shuttle in-pool configurations, in the NBL there is room to hold both shuttle and ISS mock-ups. It is large enough and equipped to handle two double-suited dives simultaneously, and to meet the projected requirements of the crew training schedulers the facility will have to be able to do that every day.

"There's no way we could have done that in our current facility—it is just not large enough to permit that," Ross said. "We will have a complete orbiter mockup, including its arm, and a very large portion of the station in the new tank simultaneously."

Harmon Roberts, the Flight Crew

Support Division's lead for NBL facilities, said the imminent completion closes out a project that has been on and off the drawing boards for 13 years. At a Tuesday meeting, the ORI committee made substantial progress in tying up loose ends. "At our next meeting we're hoping to have all of our open actions completed and then it is just getting everything organized and ready for the final certification," he said.

Among the key players in the certification effort were NASA's Cliff Robinson, Mike Brzezinski, Robert Durkin, Carolyn Fritz, June Huhn, Leslie Schaschl and Tony Uttley, Johnson Engineering's Frank Martinez, Charlie Hoover, Hugh Gray, Kurt Otten, B.J. Mundine and Dario Velarde. They were the tip of the iceberg in a team that included Space and Life Sciences' Flight Crew Support and Medical Sciences Divisions; the Safety, Reliability and Quality Assurance Office; the Space

Shuttle and International Space Station Program Offices; Boeing's Flight Equipment Processing Contract; the Business and Information Systems Directorate's television engineers; Engineering's Crew and Thermal Systems Division and the EVA Projects Office.

"Every area had its hard spots," said B.K. Miller, Johnson Engineering's manager of NBL operations, but on the first suited dive in the NBL by Johnson Engineering's Mark Liles, the pool, the suit, the breathing gas system, the divers, the communications system, the camera system all worked nearly flawlessly.

"It worked extremely well," Miller said. "Not just on schedule, but 45 days ahead of schedule. I've done this for decades and this is a first."

Among the toughest tasks were designing, testing and training operators on a breathing gas system that uses oxygen-enriched air to effectively eliminate the potential for an astronaut

or diver getting the bends, which had not been a problem in the shallower WETF. The system for the space suits had to be safe, reliable and compatible with the tanks used by the divers.

"We had to order equipment, get it here, get it assembled, get it tested and put it into operation while we were doing all the WETF diving that we do on a normal daily basis," Miller said. "Same number of people—twice the work—and no fist fights."

The final testing schedule started with an unmanned space suit run in mid-October, followed by the first human dive in the NBL. Next, Scott Wright and Steve White made the first double-suited dive, which was followed in late October by the dives by Ross and Godwin.

The transition from the WETF to the NBL will be a four to six-month effort, Miller said, that should be complete in April or June. Johnson said he expects the transition from the WETF to the NBL to be smooth.